

Nimrod's Replacement !

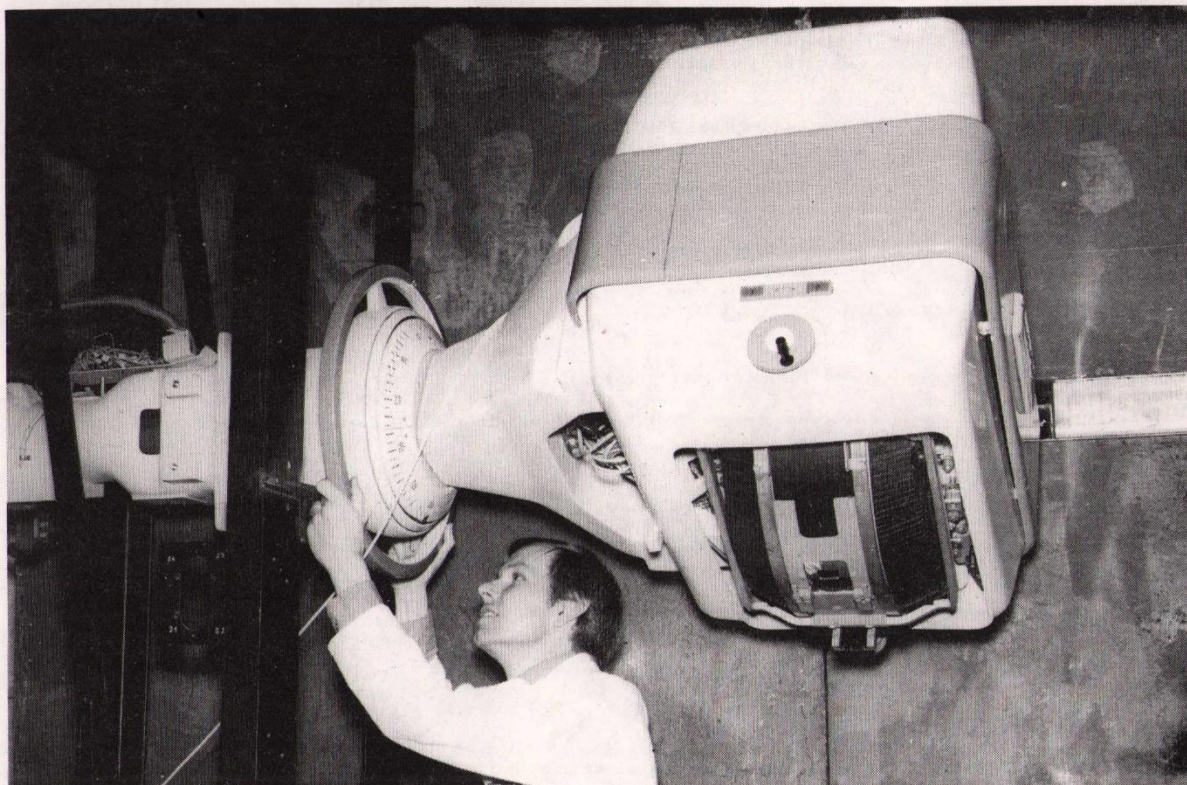


Photo - Courtesy CERN Courier

The photo above shows the latest piece of apparatus to arrive at the Rutherford Laboratory. The title, although true in one respect, does not mean that it will physically replace NIMROD and sit in the middle of the machine hall looking lost and forlorn!

It is an 18 MeV betatron, which can produce either gamma-rays or electrons, built by Siemens, Germany, probably about 20 years ago for use in the world famous Hôpital Cantonal de Genève (Cantonal Hospital of Geneva).

The machine was acquired by CERN in 1974 and used for tests at the 3.7m European Bubble Chamber, BEBC, at a time when the beam line from the 28 GeV (PS) synchrotron had been dismantled to make room for the installation of the SPS beam lines in the West Hall: for this purpose it was operated in the gamma mode.

The betatron will now have a permanent home at the Rutherford Laboratory and will shortly be installed in the ex-PLA high voltage area and operated by the Physics Apparatus Group.

It is expected to come into use shortly after the NIMROD close-down to provide a low intensity electron beam (50 μ sec pulses every 20 msec), for testing particle detectors, eg scintillation counters and multiwire proportional and drift chambers, for experiments at CERN and DESY.

Thanks are expressed to Gordon Walker, Head of the Physics Apparatus Group for providing technical information, and to Brian Southworth, Editor CERN Courier, for the rapid transport of photo.

HARWELL & CULHAM WELFARE FUND

Membership of the Harwell & Culham Welfare Fund is open to all employees of the Rutherford Laboratory. The object of the Fund is to give assistance to any employee, who is found on investigation, to need temporary financial help. Its resources are devoted entirely to the provision of grants of money or interest-free loans to employees and their families.

The Fund is a registered charity and its income is

derived solely from voluntary donations. The Welfare Fund Committee needs to increase its regular source of income and appeals to all employees to subscribe 2p per week if they are weekly paid, or 10p per month if paid monthly.

Further details and application forms may be obtained from: Miss A Curran, Personnel Group, Building R20, Extension 495.

INTERNAL EVENTS

NIMROD LECTURE SERIES

Tuesday, 2 May
1130
Lecture Theatre

G-Parity in Charm Decays

Dr L Stodolsky/Max Planck Institute

NIMROD LECTURE SERIES

Monday 8 May
1100
Lecture Theatre

Mathematical Aspects of Yang-Mills Theory

Professor M F Atiyah FRS/Oxford

TRADE EXHIBITION

Monday 8 May
1000-1615
R20 Car Park

Tektronix UK Ltd will be bringing their (very) large Computer Products Demonstration Bus to the Lab. On display will be: 4014 Graphic Terminal, 4051 Graphic Computing System, 4006-1 Graphic Terminal, 4025 Terminal together with a range of associated equipment - Hard Copy Units, Digital Tape Cartridge Units, Digital Plotters, Graphic Tablets etc.

RUTHERFORD LABORATORY LECTURE

Tuesday 9 May
1515
Lecture Theatre

Why Quadraphony is Dead

Professor P B Fellgett/Department of Cybernetics - University of Reading
(Details in 'News' section)

HEP SEMINAR

Wednesday 10 May
1100
R61 Conference Room

Recent Developments in Supersymmetry and Supergravity.

Professor B Zumino/CERN

DIRECTOR'S STAFF MEETINGS

Wednesday 10 May
1030 and 1530
Lecture Theatre

The Director will preside

Closed circuit TV will be in use in the R22 Coffee Lounge.

NIMROD LECTURE SERIES

Monday 15 May
1130
Lecture Theatre

The Nucleon - Nucleon Interaction and Isobars in Nuclei.

Professor A M Green/Helsinki and Sussex

HEP SEMINAR

Wednesday 17 May
1100
R61 Conference Room

J/ψ Production in 200 GeV/c π^+p Interactions from Experiment E369 at Fermilab

J Davies/Oxford

NIMROD LECTURE SERIES

Monday 22 May
1400
Lecture Theatre

Title not available at time of going to press.

Professor A De Rujula/CERN

HEP SEMINAR

Wednesday 24 May
1100
R61 Conference Room

Spontaneous Breakdown of Supersymmetries.

P Higgs/Edinburgh

SPECIAL NIMROD LECTURE

Thursday 25 May
1400
Lecture Theatre

A Tuneable Electromagnetic Detector for Gravitational Waves.

Dr E Picasso/CERN

FILM BADGE NOTICE

It is Period 5. Colour Strip - GREEN for $\beta\gamma$ films and neutron packs. Please check that you are wearing the correct dosimeter and that all old ones are returned.

REQUEST FROM ILL

Mr J M Veau, 10 domaine St Hugues, 38120 St Egreve, would like to rent a house or flat for 7 people in a quiet area from 6-20 August.

A. G. M.

Recreational Society
at 12.40

Wednesday, 10 May
Lecture Theatre

EXTERNAL EVENTS

NUCL PHYS DIV COLLOQUIA/AERE, CONF RM, H8 - 1530 hrs

- 3 May: Dr Jay Keyworth/LASL - Planned experiments on the neutron facility at LAMPF.
- 4 May: Dr J D Lawson/RL - Inertially confined fusion using heavy ion beams?

THEOR PHYS SEMINARS/AERE, CONF RM, BLDG 8.9 - 1400 hrs

- 9 May: Prof J E Enderby/Bristol - Ionic liquids: Recent progress in understanding their structure.
- 16 May: Dr R Rennie/Oxf - The electronic structure of non-crystalline materials.
- 23 May: Dr P Hutchinson/E ScD - The Ice Project.

THEORETICAL PHYSICS SEMINARS/CLARENDON LAB, OXF - 1615 hrs

- 4 May: Prof M A Moore/Manchester - Spin glasses
- 11 May: Prof A S Goldhaber/Sussex & Stony Brook - In which a Bose monopole combines with a Bose charged particle to make a Fermion.
- 25 May: Dr D Wallace/Soton - Tunnelling Phenomena in quantum and statistical physics.

ELEMT PART THEORY SEMINAR/TP DEPT OXFORD - 1430 hrs

- 5 May: P Hoyer/Nordita - A scheme for the hadron spectrum

ELEMT PART PHYS SEMINARS/NP DEPT, OXFORD - 1430 hrs

- 4 May: Dr H Bingham/RL&UCB - Results from the Fermilab $\bar{\nu}$ experiment.
- 11 May: Dr P Grossmann - Jet structure of hadronic systems produced in neutrino interactions.
- 18 May: Dr A Raychaudhuri - Variables for the identification of jet structure.

HEP SEMINARS/DAMPT, CAMBRIDGE - 1500 hrs

- 18 May: Dr A Goldhaber/Sx - Title to be announced.
- 25 May: Dr C Sachrajda/CERN - Parton model and QCD.

HEP SEMINARS/PHYS DEPT, BIRMINGHAM - 1615 hrs

- 5 May: Dr Jarvis/Soton - New symmetries for elementary particles.
- 12 May: Dr J Dowell/B'ham - Physics with the \bar{p} collider.
- 19 May: Dr G Myatt/Oxf - Results from beam dump experiments at CERN.

THEORETICAL PHYSICS SEMINARS/MANCHESTER U - 1430 hrs

- 10 May: Dr P B Jones/Oxf - Particle acceleration at the magnetic poles of a neutron star.
- 17 May: Prof E Picasso/CERN - Quantum Electrodynamics
- 24 May: Dr A Brown/Oxf - Empirical single particle matrix elements in the sd-shell deduced from magnetic moments and Gamow-Teller beta decays.

THEORETICAL PHYSICS SEMINARA/QMC - 1615 hrs

- 8 May: Dr R S Ward/Oxf - Self-dual solutions of the Einstein equations.
- 15 May: Dr Haydock's seminar is POSTPONED until 22 May in view of the Bedford Symposium on 'Statistical and Many-Body Physics' (no details received on this).
- 22 May: Dr R Haydock/Camb - Electron localization in weakly-disordered systems.
- 29 May: Prof M A Moore/Manchester - Spin glass.

THEORY GROUP SEMINARS/DARESBURY LABORATORY - 1400 hrs

- 8 May: Dr F A Brieva/Oxf - Microscopic description of nucleon-nucleus scattering.
- 15 May: Dr M Harrison/Culham - Crossed beam electron ion/atom impact experiments.
- 22 May: Dr A Brown/Oxf - Shell-model descriptions of coulomb displacement energies and charge-dependent matrix elements in the $f_{7/2}$ shell.

RUTHERFORD LABORATORY LECTURE

Professor P B Fellgett, FRAS, FRSE, of the Department of Engineering and Cybernetics,

University of Reading, the next speaker in this series, was educated at Cambridge where he obtained his MA in 1947 and Ph D, 1952.

Following work in the Infra-red Group, 1942-47, including the early development of self-recording infra-red spectrometers, his post-graduate years were spent at the Observatories, Cambridge, followed by a year at the Lick Observatory, USA. He returned to the UK in 1952 to develop multiplex spectrometry under a Royal Society grant and to serve as Senior Observer on the staff of the Cambridge Observatories.

He left Cambridge in 1959 on appointment as Head of Electronics Group, ROE and from 1963-65 as Head of Astronomical Instrumentation Division still at Edinburgh.

In 1965 Peter Fellgett moved South to become Professor of Cybernetics at Reading University; since then he has served as a Member of - the Home Secretary's Committee on Prison Security, the Advisory Branch Committee to the Home Office Scientific Advisory Council, the National Gallery Honorary Scientific Advisory Committee, and in 1974, the BBC South Advisory Council.

During the past 7-8 years Peter Fellgett's interest in the field of sound or rather - "surround sound" has become widely known and he and a small team have been perfecting a system called "Ambisonics", the work being sponsored by the NRDC: both the BBC and the IBA are interested parties in this research.

Professor Fellgett's lecture, to be given in the Lecture Theatre at 1515 on Tuesday 9 May is entitled, "Why Quadraphony is Dead" and he has kindly supplied the following abstract:

Realism in reproduction of sound includes the sensation of direction. The development from monophonic reproduction to stereo provided a sense of direction in the front sector only. More recently there has been interest in extending the reproduction of directionality to all around the listener, and a large body of systematic theory and engineering practice for surround reproduction has been built up. This technology allows specified requirements to be met in surround systems, using two or more channels of communication, giving good flexibility in the number and layout of loudspeakers used by the listener, so that engineering design and specification can now replace choice between arbitrary "systems".

OVERSEAS VISITS

Dr G E Kalmus and Dr C M Fisher, to CERN, 1-3 May, for discussion of

WA24 and WA30 at SPSC meeting.

Dr S Jaroslawski, to CERN, 1-5 May, to work on WA7 processor.

Mr G M McPherson, to CERN, 1-19 May, to work on WA7 and OMICRON.

Dr J J Thresher, to CERN, 2-3 May, to work on Proposal 140 and attend CERN/ECFA meeting on LEP.

Dr M G Albrow, to CERN, 2-3 May to attend SPSC meeting.

Dr C J S Damerell, to CERN, 2 May-6 June, to work on various experiments.

Mr L Phillips, Mr D Holland and Mr K Miles, to DESY, 2-6 May, for installation work on JADE.

Mr M D Fitzgerald, to CERN, 2-6 May, to deliver goods.

Mr G Tarnpern and Mr J Summers, to CERN, 2-9 May for testing and installation of Muon experiment.

Mr J Hoskins and Mr M D Jeffs, to CERN, 2-12 May, to test and repair MWPC readout systems.

Mr B Claxton and Mr H G Hawthorne, to CERN, 2-12 May, to work on Muon beam line equipment.

Mr M Edwards, to CERN, 2-12 May, to work on proportional and drift chambers for EMC.

Dr A M Gillman, to CERN, 3-17 May, to work on WA3.

Dr B Alper, to CERN, 5-19 May, to work on WA3.

Dr I F Corbett, to CERN, 7-10 May, for discussions.

Dr P R Williams and Dr I N Ross, to Japan, 7-22 May, to study laser components, designs and applications.

Dr J Carr, to CERN, 8-19 May, to work on EMC experiment.

Dr M G Albrow, to CERN, 9-10 May, to attend ISRC meeting.

Dr D H Reading, to Brussels, 21-26 May, to attend 6th Symposium on Microdosimetry.

Dr G C Stirling, to Strasbourg, 22-25 May, to attend Europhysics conference on macromolecular physics.

Fun and Games up North

The first SRC "Indoor Sports Day", held at the Norton Recreational Centre, Runcorn, on Friday 31 March, attracted some 300 competitors. Sixty hopeful RL participants set out at 8 am that morning to travel to the frozen wastes of Daresbury land. Perhaps this is an appropriate place to correct a scandalous statement which appeared in the last issue of Daresbury News, quote: "As expected, the coaches from the south got lost as they entered the unchartered territory to the north of Oxford". The cultured south extends to Stratford - it is beyond that point that the unchartered territory begins!

The RL party returned in the early hours of Saturday morning having shared the honours with Daresbury, each Lab winning four of the eight events. The ninth event, swimming, had to be cancelled as the bath was either empty, frozen, or filled with coal, according to which rumour one believes.

TABLE TENNIS Ten teams of 3 players entered including the RL 'A' and 'B' teams. The 'B' team of Andy McPherson, Kate Crennell and Tony Cash fought gallantly through to the semi-finals where they were beaten by RGO. Meanwhile, the 'A' team, Peter Kent, Tim Pett and John Varley, had succeeded in reaching the final, beating on the way, Appleton and Daresbury 'A', the latter providing very strong opposition in the semi-final. It also produced the best match of the competition, Peter Kent eventually overcoming C Hatton in a contest of changing tactics - which drew out the best from both players. The strength of the RL 'A' team was demonstrated once again in the final where they ran out winners against an RGO team by 6-1.

DARTS Daresbury's claim to have successfully sabotaged the tournament by entering eight teams is hardly born out by the results. So many teams entered that 3 leagues were formed; even so, time ran out and the winners were decided on a 'most games won by a Lab' basis. The RL entered 3 teams:

RUTHERFORD TEAMS		ATLAS SUPERSTARS
A	B	C
Ian Foster	Cyril Grindrod	Ann Roberts
Tudor Evans	Jim Flynn	Dave Daniel
Brian Wheeler	Robin Wastle	Jenny Service
Peter Angel	Dave Edwards	Alan Stevens
Ray Wyatt	John Maran	Ken Hogg
		Liz Karavessler
		Jeanette Ford

As will be noticed Team C produced their own brand of sabotage fielding 7 players, although only 5 played in any one

game. They did extremely well as none of them are regular players. The final result once again showed the superiority of the RL players as they won all three leagues.

SQUASH Five teams entered in the knock-out tournament, one each from Rutherford, Atlas, Appleton, and two from Daresbury, each team consisting of 3 men and 2 women playing the best of 3 games in the preliminary rounds and the best of 5 in the final.

The Atlas team - Pam Coulthard, 'Steve' Woodward, Terry Dunwoody, Dave Thomas and Richard Hilken, were beaten in the first round 4-1 by Daresbury 'B' who in turn were defeated by Rutherford - Jenny Coates, Leona Cooke and Bob McClure, all winning easily 2-0, and John Mogford 2-1 after a struggle; John Rice who had a disappointing day, lost his match, 2-0.

In the other half of the competition Daresbury 'A' beat Appleton, so once again it was an RL v Daresbury final. Bob McClure, John Mogford and Jenny Coates all won their matches, Jenny in a class of her own winning easily by 3-0. Leona Cooke in a tremendous battle against Christine Thompson lost the first two games, then came back strongly to draw level at 2-2. In a very exciting final game Leona just lost 10-8 to go down 3-2, and an off-form John Rice lost 3-0.

So, after a hard-fought final, the RL team ran out winners to become the first ever SRC Squash Champions.

BADMINTON In the mixed doubles, Kay Knight and Roger Wolfenden playing together as a team for the first time won the event. The mens doubles produced another win in an event dominated by Rutherford - Dave Wootton and Len Sproats beating another RL pair, Jimmy Chauhan and John McMahon in the final. A third RL pair, Brian Boardman and Richard Lawrence also reached the semi-final.

CHESS A very good second place for Richard Curl who only lost one game to the winner, Trevor Daniels from Daresbury. Peter Craske, the RL champion, was due to play in the event but had to withdraw at the last minute.

We had no entries in the Bridge or Dominoes competitions.

The various trophies were presented by Professor Geoffrey Allen and the first ever SRC Indoor Sports Day concluded with a hot-pot supper and disco in the Daresbury restaurant. From all reports this final event was greatly enjoyed, thanks to the truly splendid efforts made by our Daresbury

From all reports this final event was greatly enjoyed, thanks to the truly splendid efforts made by our Daresbury colleagues.

You can say that again

FROM THE EDITOR After 15 years as Editor of the Rutherford Laboratory Bulletin, it is with mixed feelings that I end this, my final edition.

When I took over the job, the commissioning of NIMROD was under way and a typical Bulletin contained a few hundred words. Within a few weeks NIMROD will close down for good and the number of words contained in an average issue of the Bulletin has risen to around 3000-3500.

In those early days 350 copies/issue were printed and distributed around the Lab. Now the print order is 1200 and it is sent to 9 countries, from Vancouver, Canada to Singapore, to about 20 universities and to many other places in this country (press journals etc) spreading RL news far and wide. However, it is and has remained first and foremost, as a house journal to inform staff of all aspects of Lab life ranging from the latest developments in the scientific field to social and sporting events.

This has only been possible by the assistance and

goodwill of many people both inside and outside the Rutherford Laboratory. I would therefore like to conclude by thanking all those who have contributed 'copy' throughout the years from outside the Lab. Secondly my thanks to Lab colleagues who have not only produced so many informative and interesting articles but whose guidance and assistance on my own articles has been invaluable and deeply appreciated.

Finally my sincere thanks - to Myra Gilbert and her 'girls' in the Typing Centre, to Gordon Scott and Bill Oliver of the Repro Section and latterly Reg Jones and Mike Butler of the Photographic Section, all of whom have played a vital part in the production of the Bulletin.

As emigration to some distant land does not feature in my plans for the future, goodbyes are out as I hope to keep in touch with old friends and colleagues. After twenty nine years on the wind swept ex airfield the prospect of no more deadlines is rather pleasant.

RUTHERFORD LABORATORY BULLETIN

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